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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/605,429	09/30/2003	JAMES N. HUMENIK	FIS920020186US1	2428

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EXAMINER	
GORDON, BRIAN R	

ART UNIT	PAPER NUMBER
1743	

MAIL DATE	DELIVERY MODE
06/12/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/605,429	HUMENIK ET AL.	
	Examiner	Art Unit	
	Brian R. Gordon	1743	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on 5-31-07.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) 36-56 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) 36-56 is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date ____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Response to Arguments

1. Applicant's arguments filed May 31, 2007 have been fully considered but they are not persuasive.

Applicant asserts Natarajan et al. does not disclose at least two vertical passages in an array of cells.

Natarajan clearly discloses: (column 2, line 38+)

"The assembly process is the same for ceramic structures with arrays of thousands of holes, with thousands of horizontal channels selectively connected to link vertical holes."

In view of such the previous rejection as based upon Natarajan is hereby maintained.

In view of applicant's argument the 102 rejection of the claims has been withdrawn and a new 103 rejection is given herein. Furthermore it should be noted the argument of asserting the Trickett is not applicable for microfluids applications is not commensurate in scope with that of the claims for the method nor apparatus claims are directed to such.

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 51 and 56 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The Markush group of claim 51 is unclear for the elements of glass ceramic, glass, and borosilicate glass overlap and are not mutually exclusive.

Claim 56 is not further structurally limiting, for the container is not an element of the sample holding plate. It appears as applicant is attempting to claim the combination of the sample plate of claim 51 and a container storing a rinsing fluid connected to at least one of said at least two vertical passages.

The article "A" at the beginning of each dependent claim should be "The".

The following amendments would resolve such issues:

In the claims,

In claim 51, amend element (a) as follows:

(a) a plurality of ceramic layers sintered together, said ceramic layers comprised of a material selected from the group consisting of alumina, ~~glass-ceramic,~~ aluminum nitride, and glass ~~and borosilicate glass~~;

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 36-37 and 39-43, 45-55 are rejected under 35 U.S.C. 102(e) as being anticipated by Natarajan et al. US 6,955,777

The applied reference has a common inventor with the instant application. Based upon the earlier effective U.S. filing date of the reference, it constitutes prior art under 35 U.S.C. 102(e). This rejection under 35 U.S.C. 102(e) might be overcome either by a showing under 37 CFR 1.132 that any invention disclosed but not claimed in the reference was derived from the inventor of this application and is thus not the invention "by another," or by an appropriate showing under 37 CFR 1.131.

Natarajan et al. disclose a structure formed using 3 green sheets and 1 horizontal channel connecting two vertical wells for simplicity in illustration. The structure has been assembled from individual sheets by lamination. The assembly process is the same for ceramic structures with arrays of thousands of holes, with thousands of horizontal channels selectively connected to link vertical holes. The ceramic material may include alumina, glass ceramic, aluminum nitride, borosilicate glass and glass. The diameter of vertical wells can be 20 microns or more, the channel width can be 20 microns or more and the length can be a minimum of 20 microns. The shape of a well exposing a substance may be circular, rectangular, smooth or rough. The total thickness of the plate 10 may be any desired amount, but preferably is under 1 mm. The thickness of the greensheet depends on the application, but preferably ranges from about 3 mils to about 30 mils.

The technique for forming vertical apertures and horizontal channels is material removal by techniques such as punching the material out including nibbling, laser drilling, e-beam drilling, sandblasting and high pressure liquid jets.

Additionally, the material in the passages may be one that forms a non-porous sheath on being sintered, so that the passages receive a liner.

The reference clearly encompasses the method of the cited claims.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claims 38 and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Natarajan et al.

Natarajan et al. do not disclose a source of rinsing liquid.

It would have been obvious to one of ordinary skill in the art at the time of the invention to recognize the structure would be required to be washed/rinsed in between usages to avoid cross contamination.

7. Claims 40-49, 51, and 55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Trickett et al., US 4,833,000.

Trickett et al. disclose a method of preparing ceramic monolithic structures with an internal cavity and passageways is described. A thin sheet of a ceramic material is formed by spreading the material on a glass plate with a doctor blade. Individual sheets of the material are cut or punched to form predetermined holes, channels or various shapes therein. These individual sheets are then stacked to form a layered structure. A supporting media such as paraffin wax is injected into the holes and channels to completely fill them with the media. The layered structure is then pressed by unipressing and/or isostatic pressing followed by a prefiring step to remove the

supporting media. Once the supporting media had been completely removed, the layered structure is then sintered to form a monolithic structure containing precise predetermined internal cavity and passageways (abstract).

The layered structure having a surface and a cavity contained therein is formed by stacking individual sheets of a ceramic material. Predetermined individual sheets having apertures therein. The individual sheets are stacked in a predetermined sequence to form a layered structure having a passageway and a cavity therein. The layered structure formed by the stacking of the individual sheets has a surface and a cavity connected to the surface thereof by a passageway. a layered structure having a surface and a cavity contained therein is formed by stacking individual sheets of a ceramic material. Predetermined individual sheets having apertures therein. The individual sheets are stacked in a predetermined sequence to form a layered structure having a passageway and a cavity therein. The layered structure formed by the stacking of the individual sheets has a surface and a cavity connected to the surface thereof by a passageway.

In FIG. 1 an exploded perspective view of a layered structure 10 depicting individual sheets of ceramic material 20, 21, 22, made by forming a large sheet of a ceramic material, such as alumina, lanthana, yttria, magnesia, aluminum oxynitride, silicon nitride, and magnesium aluminate or combinations thereof which was cut into individual sheets 20, 21, and 22. Predetermined individual sheets were punched or cut out to form apertures 23 and 24 of individual sheets 20 and 21, respectively.

The finished monolithic lanthana doped yttria structure has a domed shape with passageways and a cavity to facilitate cooling and is transparent to infrared.

The product may also be pressed sufficiently to form a layered structure.

The ceramic sheets from which the layers are cut are from about 1 mil to about 100 mils thick.

The reference clearly encompasses the method of the cited claims.

Trickett et al. does not disclose and array of cells however the reference further states while there has been shown and described what is at present considered the preferred embodiment of the invention, it will be obvious to those skilled in the art that various changes and modifications may be made therein without departing from the scope of the invention as defined by the appended claims.

In view of such it would have been obvious to one of ordinary skill in the art at the time of the invention to recognize multiple maybe manufactured simultaneously to increase the productivity of the structures, efficiency of the process, as well as to minimize waste material resulting therefrom.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian R. Gordon whose telephone number is 571-272-1258. The examiner can normally be reached on M-F, Telework Thurs., 1st Fri. Off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Brian R Gordon
Primary Examiner
Art Unit 1743

brg

BRIAN R. GORDON
PRIMARY EXAMINER